

Bpertussis	61 RARKYLQQQMERFLFEDGTVEAQGYVP----
Bparapert	61 RARKYLQQQMERFLFEDGTVEAQGYVP----
Bbronchi	61 RARKYLQQQMERFLFEDGTVEAQGYVP----
A.actin	61 EHRKLLQEMVNFLEFGKDVHIEGYTPPEAK
Pmultocida	61 DHRQLLEQEMVNFLEFGKDVHIEGYVP----
Hinfluenzae	61 EHRKLLQEMVNFLEFGKDVHIEGYVP----
Hducreyi	61 EHRQLLEAEMVNFLEFGKDVHIDGYVP----
Sputrefasciens	61 DDRKFLEAQMTSFLFEGKDVEIEGFVPE---
Vcholerae	61 EHRKLLQEMVNFLEFGKEVHIEGYTPPAK-
Ecoli	61 EHRKLLQEMVNFLEFGKEVHIEGYTPEDKK
O157_H7EDL933	61 EHRKLLQEMVNFLEFGKEVHIEGYTPEDKK
O157_H7	61 EHRKLLQEMVNFLEFGKEVHIEGYTPEDKK
Spara	61 EHRKLLQEMVSFLFEGKDVHIEGYTPEDKK
Senteritidis	61 EHRKLLQEMVSFLFEGKDVHIEGYTPE---
Sdublin	61 EHRKLLQEMVSFLFEGKDVHIEGYTPEDKK
StyphiCT18	61 EHRKLLQEMVSFLFEGKDVHIEGYTPEDKK
Styphimurium	61 EHRKLLQEMVSFLFEGKDVHIEGYTPEDKK
Kpneumo	61 EHRKLLQEMVQFLFEGK-----
Ypesits	61 EDRKLLQEMVNFLEFGQDVHIAGYTPPSK-
Buchnera	61 EHRKKIEKYMKLELFK-----
Xfastidiosa	61 SHRAFLEEELNKFLFERRVAKPEGYIEPD--
Psyring	61 EDRKFLQTEMDKFLSGEYEAQAGYVPPEK-
Pputida	61 EDRKFLQAEMDKFLFAGEEYEAQAGYVP----
Paeruginosa	61 EDRKFLQQEMDKFLSGEDYAKADGYVP----
Ngonorrhoeae	61 RAREYLAQQMEQYFFGDGADAVQGYVPQ---
NmeningitB	61 RAREYLAQQMEQYFFGDGADAVQGYVPQ---
NmeningitA	61 RAREYLAQQMEQYFFGDGADAVQGYVPQ---
Bmallei	61 RARQYLMKQTEKYFFGEGADQASGYVP----
Bpseudomallei	61 RARQYLMKQTEKYFFGEGADQASGYVP----
Tferrooxidans	61 KSRTFLEKQMEAYFFGDGAQSPEGYVP----
Mcapsulatus	61 SARKFLEQEREKFLFGGGTSTPQGYVP----
Cburneti	61 KARQFLEQEMINFLFGTGSEKPAGYTSE---

Fig. 1A (continued)

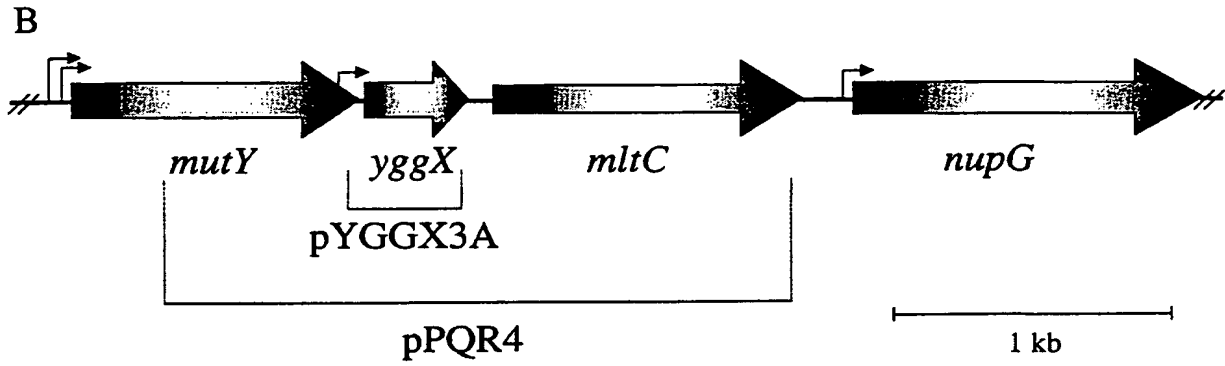


Fig. 1. Physical parameters of *yggX* and its gene product. (A) Alignment of YggX homologs. (B) Operon structure of *mutY/yggX* in *E. coli* and *S. enterica* LT2. Promoters were mapped by Gifford and Wallace in *E. coli* (43).

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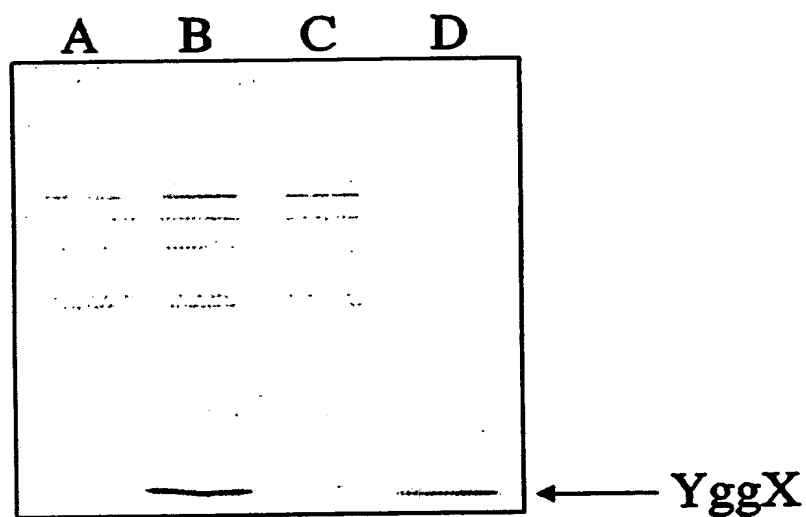


Fig. 2. Increased levels of YggX protein in *yggX** mutant. Western blot analysis was performed according to Harlow and Lane (59). Proteins were visualized by using alkaline phosphatase conjugated to anti-rabbit secondary antibody (Promega). Lanes A–C were loaded with crude cell-free extracts (1 μ g protein) from strains DM5104, DM5105 (*yggX**), and DM5647 (*yggX::Gm*), respectively. Lane D was loaded with 1 ng purified YggX.

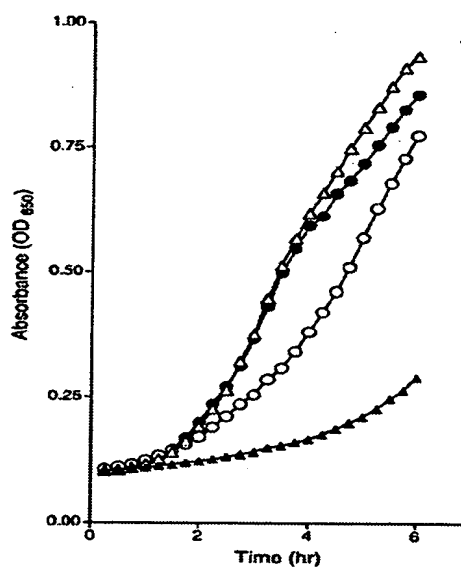


Fig. 3. The *yggX*^{*} mutation does not increase MNNG resistance of *gshA* mutants. Strain LT2 was grown in LB with (▲) and without (△) 60 μ M MNNG. Both *gshA* (○) and *gshA yggX*^{*} (●) mutant strains were grown in LB with 60 μ M MNNG.

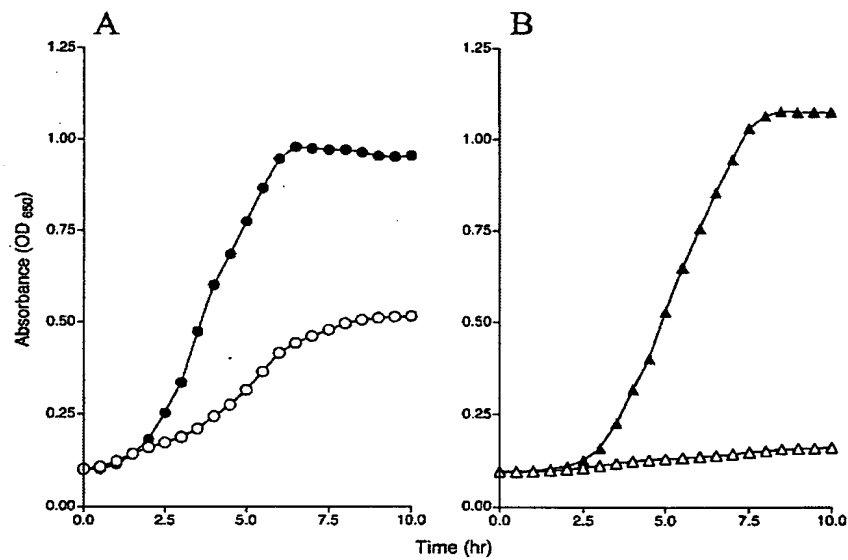


Fig. 4. The *yggX** mutation increases resistance of *S. enterica* to PQ. (A) Growth of *gshA* (○) and *gshA yggX** (●) mutant strains in LB with 4 μM PQ. (B) Growth of LT2 (△) and *yggX** (▲) strains in LB with 40 μM PQ.

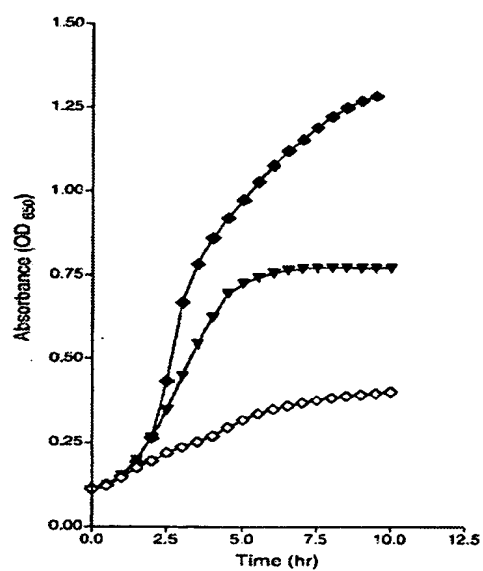


Fig. 5. *yggX** does not require *soxR* to mediate resistance to PQ. Strains LT2 (◆), *soxR* (◇), and *soxR yggX** (▼) were grown in LB with 4.0 μ M PQ.

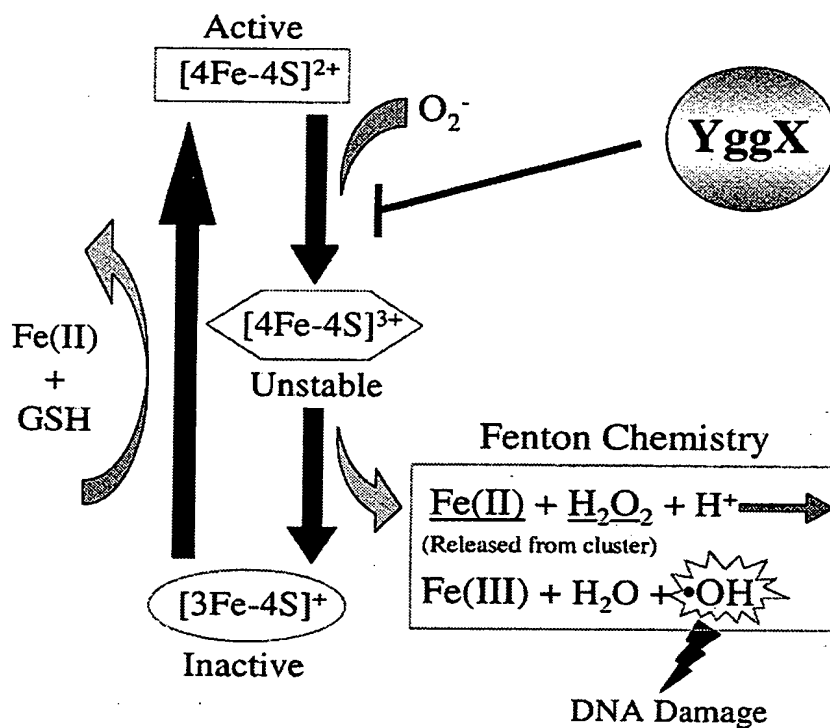


Fig. 6. Model showing how YggX protects *S. enterica* from oxidative damage. The result of superoxide attack on [Fe-S] clusters is depicted. We hypothesize that YggX is able to block oxidative damage to labile clusters and thus prevent the normal downstream consequences of such oxidation.